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ABSTRACT

Investigated were the effects of three different social situations on the performance of 48 mildly mentally retarded individuals (12-17 years old). Ss were randomly assigned to one of six treatment groups and were asked to complete simple and complex mazes in one of three audience conditions: no audience, evaluative audience, and non-evaluative audience. Number of attempts required to correctly complete two mazes in succession were recorded for each S for both the simple and complex mazes. Analysis of the data revealed a significant main effect for audience condition for both the simple and complex tasks. For the simple maze, Ss in the evaluative audience condition performed better than Ss in the non-evaluative and no audience conditions, while on the complex maze, Ss in the evaluative audience condition performed worse than Ss in the other two groups. Findings had implications for the level of arousal for maximum performance on well-learned and new tasks. (CL)

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Social Facilitation of Retardate Performance

by

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Cleland and Altman (1969) indicated that the literature has traditionally suggested a lack of responsivity of lower level retardates to various forms of social stimulation. There is, however, recent evidence available to support the sensitivity of retardates at all levels to social and quasisocial situations and stimuli.

These areas include social deprivation (Altman, 1971), social reinforcement (Altman, Talkington & Cleland, 1971), various forms of social stimulation (Altman, Cleland & Swartz, 1972; Altman, Swartz & Cleland, 1970; Cleland, Altman & Swartz, 1971), psychological reactance (Zucker & Altman, 1974), and modeling (Zucker & Altman, 1975).

In light of this evidence it appears particularly cogent to study the social facilitation phenomenon in retarded populations. Aside from some early work by Abel (1937; 1938), which was abandoned due to the confounding effects of competition and imitation, there have been no other attempts at investigating this phenomenon in retarded populations.

The effect of one individual upon another has long been a topic of concern in social psychology. Considerable experimental evidence suggests

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that a person acts differently when he is in the presence of others than when he is alone. This differential behavior is termed "social facilitation" and its effects can be either incremental or decremental depending on the type of task.

According to Zajonc (1965), the social facilitation effect is presumed to result from an enhanced arousal state produced by the mere presence of other conspecifics. This can be placed under the rubric of general arousal theory which states that there is an optimal motivational level for any given activity. Activities being learned require a low level of arousal while activities well learned require a higher arousal level for maximum performance. Thus, the presence of a conspecific may enhance or interfere with performance depending on the type of task.

Zajonc (1965) stated that it is not really performance which is increased by the presence of others but, instead, the emission of dominant responses. According to the Hull-Spence model (Spence, 1956), an increase in an individuals drive level increases the strength of dominant responses at the expense of those which are less dominant. It follows from this hypothesis that behaviors which are well-learned and familiar would be enhanced by the presence of others. If, however, new, less familiar responses were required in the performance of a given task, the more probable dominant response would interfere and impair performance.

Subsequent to this interpretation, research by Cottrell and his colleagues (Cottrell, 1968; Cottrell, Rittle & Wack, 1967; Cottrell, Wack, Sekerak & Rittle, 1968), has indicated that increased arousal is not due to the mere presence of the other person, but instead that it is a product of the subject's evaluation apprehension associated with their presence. Thus, any arousal

exhibited by the individual is dependent on prior social experience and is, in effect, a learned drive.

The purpose of the present study was to investigate the effects of three different social situations on the performance of mildly retarded subjects.

METHOD

Subjects

Forty-eight noninstitutionalized mildly mentally retarded subjects were randomly selected from day school populations in Columbia Public Schools, Columbia, Missouri. Half the subjects were male, the other half female. The mean IQ was 65.17 (STD = 6.71) with a range of 55 to 75. The mean chronological age (CA) in months was 171.10 (STD = 10.72) with a range of 148 to 206. Insofar as possible, subjects evidencing handicapping conditions other than mental retardation were eliminated from the sample and all subjects were ambulatory.

Based on a 3x2 design (audience condition x sex), subjects were randomly assigned to one of six treatment groups. Analysis of variance (ANOVA) tests performed on the IQ and CA data indicated no significant differences between treatment groups. Table 1 presents the IQ and CA data for each treatment group.

INSERT TABLE 1 ABOUT HERE

The experimental manipulation of simple or complex maze was counterbalanced across subjects. Half the subjects in each treatment group completed the simple maze first and the complex maze last, while the other half completed the complex maze first and the simple maze last.

Apparatus

The study was conducted in an available room in the school the subjects attended. The room contained a table and a number of chairs. In light of the nature of the task, the room was well lighted and minimally distracting.

The mazes were supplied by the experimenter, as were the pencils for the subjects to use. In the evaluative audience conditions the experimental confederate had a clipboard with paper, a pen, and a stop watch.

INSERT FIGURE 1 AND FIGURE 2 ABOUT HERE

Figures 1 and 2 contain the simple and complex mazes. The mazes each contained 20 horizontal levels and 14 vertical levels. Each maze required 22 correct turns for solution. The difference between the simple and complex mazes was in the placement of baffles at various levels in the mazes. By varying the location of these baffles the probability of a correct response was manipulated. The simple maze had 42 possible turns, 22 of which were correct, thus, the probability of a correct response was greater than 50 percent. The complex maze had 85 possible turns, 22 of which were correct, thus, the probability of a correct response was less than 30 percent.

Procedure

All subjects were brought individually to the experimental room in a predetermined random order. The subjects were greeted by the experimenter, seated at the table and read the following instructions:

> I am going to give you some puzzles to solve.
> You have probably seen this kind of puzzle before in
> comic books or magazines. All you have to do is take

your pencil and mark a path from the starting point to the apple without crossing any lines. Once you start the puzzle, be sure not to pick up your pencil until you reach the apple. When you come to a turn, try not to take too long, make your choice and continue tracing the path. If you make a mistake, don't worry or try to erase it, I'll give you another puzzle. I brought lots of them with me. (Experimenter indicates stack of mazes on the table). I want you to keep doing the puzzles until you get one right.

At this stage of the experiment the instructions differed depending on which audience condition the subject was in. Subjects in the no audience conditions received no additional instructions. They were merely told to begin. Subjects in the evaluative audience conditions received the following additional instructions:

Before you begin, I want to introduce you to Mrs. Rogers. (Mrs. Rogers, a confederate, sits down next to the subject with a stopwatch and clipboard). She is interested in finding out how well you do these puzzles. As you can see, she is going to sit here and time you as you do the puzzles. You may begin.

Subjects in the non-evaluative audience conditions received these additional instructions:

Before you begin, I want to introduce you to Mrs. Rogers. (Mrs. Rogers, the same confederate, sits down next to the subject with nothing in her hands). She has never done these kinds of puzzles before, so she wants to sit here

and learn how to do them by watching you. You may begin.

After the subject successfully completed one maze, the experimenter continued with:

> That was very good. Now, just to show me that you really know it, let's see if you can get one more right.

If the subject did not successfully complete this maze he continued until the criterion of two correct in succession was satisfied. When the subject accomplished this he was given the following additional instructions:

> You did so well on this puzzle that I would like you to do a different one for me. (Experimenter indicates another stack of mazes). This one looks like the first one but it is really different. I want you to keep doing this one until you get it right, and remember, don't worry about erasing your mistakes because I have lots of these puzzles too. You may begin.

After the subject successfully completed one maze, the experimenter continued with:

> That was very good. Now, just to show me that you really know it, let's see if you can get one more right.

If the subject did not successfully complete this maze he continued until the criterion of two correct in succession was satisfied. The subject was thanked for his participation and returned to his classroom.

In all conditions the experimenter stood behind and to one side of the subject and supplied the subject with new mazes as required. The order of maze completion, either simple first or complex first, was randomly predetermined for each subject. The number of attempts needed to correctly

complete two mazes in succession were recorded for each subject for both the simple and complex mazes.

RESULTS

Separate 3x2 (audience condition x sex) ANOVA's were performed on the trials to criterion data for the simple maze and the complex maze.

Simple Maze

Analysis of the simple maze data indicated a significant main effect for audience condition ($F = 8.91$, $DF = 2,42$, $p < .05$). Figure 3 indicates the mean number of trials to criterion for the audience conditions on the simple maze. The evaluative audience, non-evaluative audience and no audience group means were 3.38, 6.01 and 5.44, respectively. Post-hoc

INSERT FIGURE 3 ABOUT HERE

Newman-Keuls comparisons indicated that the evaluative audience mean was significantly different than the non-evaluative and no audience means ($p < .05$) and that the non-evaluative and no audience means were not significantly different ($p > .05$). Thus, both the non-evaluative audience and no audience groups took significantly more trials to correctly complete two simple mazes in succession than did the evaluative audience group.

Neither the main effect for sex ($F = .49$, $DF = 1,42$, $p > .05$) nor the interaction of audience condition x sex ($F = 2.02$, $DF = 2,42$, $p > .05$) were found to be significant.

Complex Maze

Analysis of the complex maze data indicated a significant main effect for audience condition ($F = 14.13$, $DF = 2,42$, $p < .05$). Figure 4 indicates the mean number of trials to criterion for the audience conditions on the complex maze. The evaluative audience, non-evaluative audience and no audience group means were 11.13, 7.44 and 6.51, respectively. Post-hoc

INSERT FIGURE 4 ABOUT HERE

Newman-Keuls comparisons indicated that the evaluative audience mean was significantly different than the non-evaluative and no audience means ($p < .05$) and that the non-evaluative and no audience means were not significantly different ($p > .05$). Thus, both the non-evaluative audience and no audience groups took significantly less trials to correctly complete two complex mazes in succession than did the evaluative audience group.

Neither the main effect for sex ($F = .08$, $DF = 1,42$, $p > .05$) nor the interaction of audience condition x sex ($F = .06$, $DF = 2,42$, $p > .05$) were found to be significant.

DISCUSSION

Before proceeding to the discussion of the results, a number of points relative to the audience manipulation need clarification. It should be evident from the procedure description that there was no "true alone" condition. The presence or absence and the evaluative function of the accomplice was manipulated, but the experimenter was present in every condition. This procedural decision was made for a number of reasons, namely, subject ability and mundane realism considerations.

Previous experience with the mentally retarded and pilot work indicated that the retarded population in this study would not persist at this type of task long enough to show any differences due to an experimental manipulation. In fact, continued support for performance and/or at least experimenter presence is generally required for retardates to independently continue on some tasks. Thus, it was necessary to include some procedure to insure subject persistance at the task. As stated earlier, this procedure was to have the experimenter present supplying the subject with new mazes as needed.

The consideration relative to mundane realism was the overriding factor in the methodological decision to have the experimenter present in all conditions. The situation in the typical classroom where the child is working alone is extremely rare. The child may be working on a problem individually, or he may even be working in an isolated section of the room, but whatever the situation there are always others, including peers, teachers, aides, etc., present. By keeping the experimenter present in all conditions a closer approximation to reality was obtained. In addition, the choice of a female for the experimental accomplice reflects the reality consideration of the disproportionately high number of female teachers in the schools.

The major finding of this study was a significant main effect for audience condition for both the simple and complex tasks. On the simple maze, subjects in the evaluative audience condition performed better than subjects in the non-evaluative and no audience conditions, while on the complex maze, subjects in the evaluative audience condition performed worse than subjects in the non-evaluative and no audience conditions.

This finding is consistent with those reported in the literature for nonretarded subjects and further substantiates the drive theory of social

facilitation. The theoretical interpretation that, under conditions of increased drive, performance is facilitated and learning is impaired can be applied to this retarded population. The performance - learning distinction was manipulated by varying the probability of correct responses in the simple and complex mazes. In the simple maze the probability of a correct response was greater than 50 percent, thus, the correct response was dominant. In the complex maze the probability of a correct response was less than 30 percent, thus, the correct response was non-dominant. Actually the dominant response in the complex maze was an error, with a probability rate of over 70 percent.

These situations are analogous to performance - learning situations. In the typical performance situation the responses are well learned, or in drive theory terms they are dominant, while in the typical learning situation the responses are not well learned, or they are non-dominant. According to the theory, if we increase the drive level of the subject we increase the emission of dominant responses, which, in the case where dominant responses are correct, would enhance performance, while in the case where dominant responses are errors, would impair learning. As indicated by the results, this is exactly what happened in this study. Subjects who were aroused did better on the simple task than subjects who were not aroused, while subjects who were not aroused did better on the complex task than subjects who were aroused.

IMPLICATIONS

The important point to be gleaned from these results in terms of implications for training is that the performance of mildly retarded subjects indicated that they were able to differentiate the evaluative situation

from the non-evaluative situations. This may have important implications for the classroom situation depending on the nature of the activity in which the child is involved.

If the child is involved with a task that has been well learned, it is essentially a performance situation. In order to facilitate maximum performance on this task the child's drive level should be raised. In this situation it would be appropriate to come in contact with the child and clearly indicate that his performance is being evaluated. It is not enough to merely observe the child, as demonstrated by the results of this study, but there must also be some communication of overt evaluation. If properly accomplished this should increase the performance of the child on well learned tasks.

The alternative situation is that in which the child is acquiring new responses or learning. Based on the theory presented earlier, this is the situation in which the child's arousal should be kept to a minimum. The teacher should in no way indicate to the child that he will be evaluated on his performance of this new task. The child should be allowed to work in this state of low arousal until his acquisition is such that the correct response is dominant. At that time efforts can be initiated to raise arousal to enhance performance.

Of course these suggestions may not be as easy to implement as they appear. There may be a number of concomitant confounding variables operating in the classroom which may attenuate the application of these principles. Of importance here is the point that if the prevailing climate in the classroom and the dynamics of the specific situation are appropriate, the research results reported here can be used to enhance the provision of optimal conditions for learning and performance.

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TABLE 1

IQ and Chronological Age of Subjects by Treatment Group

Group (N=8)	IQ		CA*	
	M	STD	M	STD
Evaluative-Male	66.13	5.62	170.25	13.41
Evaluative-Female	66.50	6.99	167.25	8.43
Non-Evaluative-Male	63.63	7.44	169.25	9.99
Non-Evaluative-Female	66.00	7.75	173.13	10.63
No Audience-Male	64.25	6.80	175.25	3.88
No Audience-Female	64.50	7.25	171.50	15.70

*In Months

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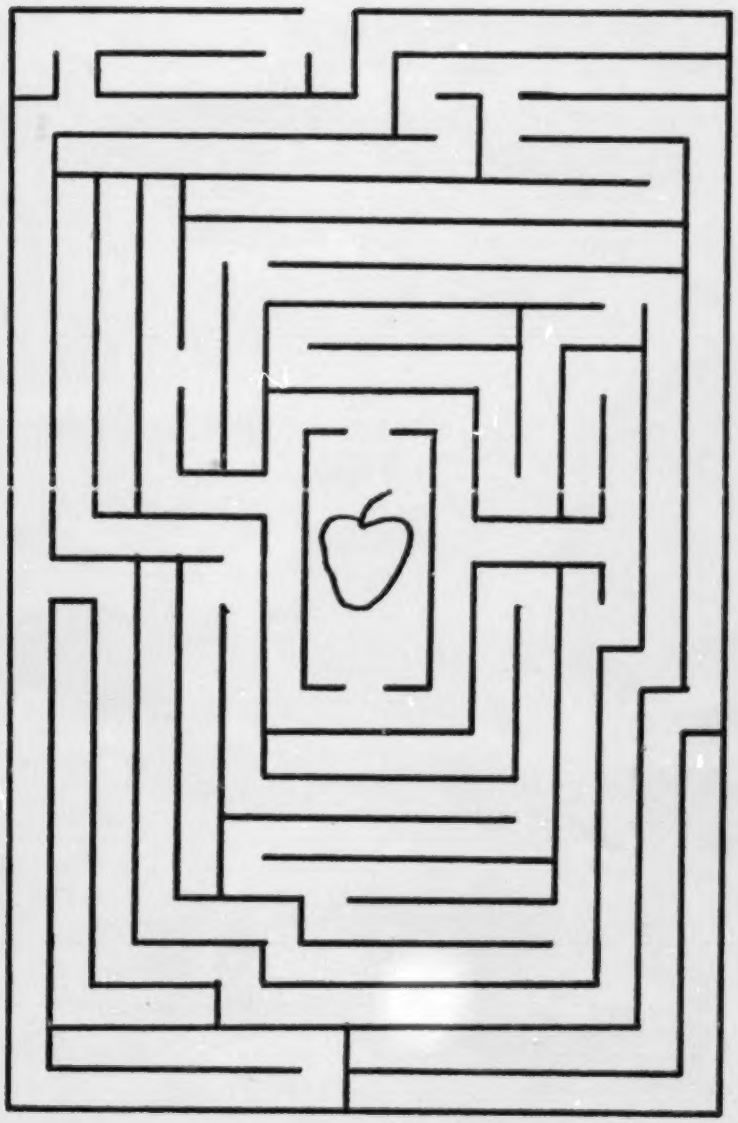

Figure 1. Simple maze.

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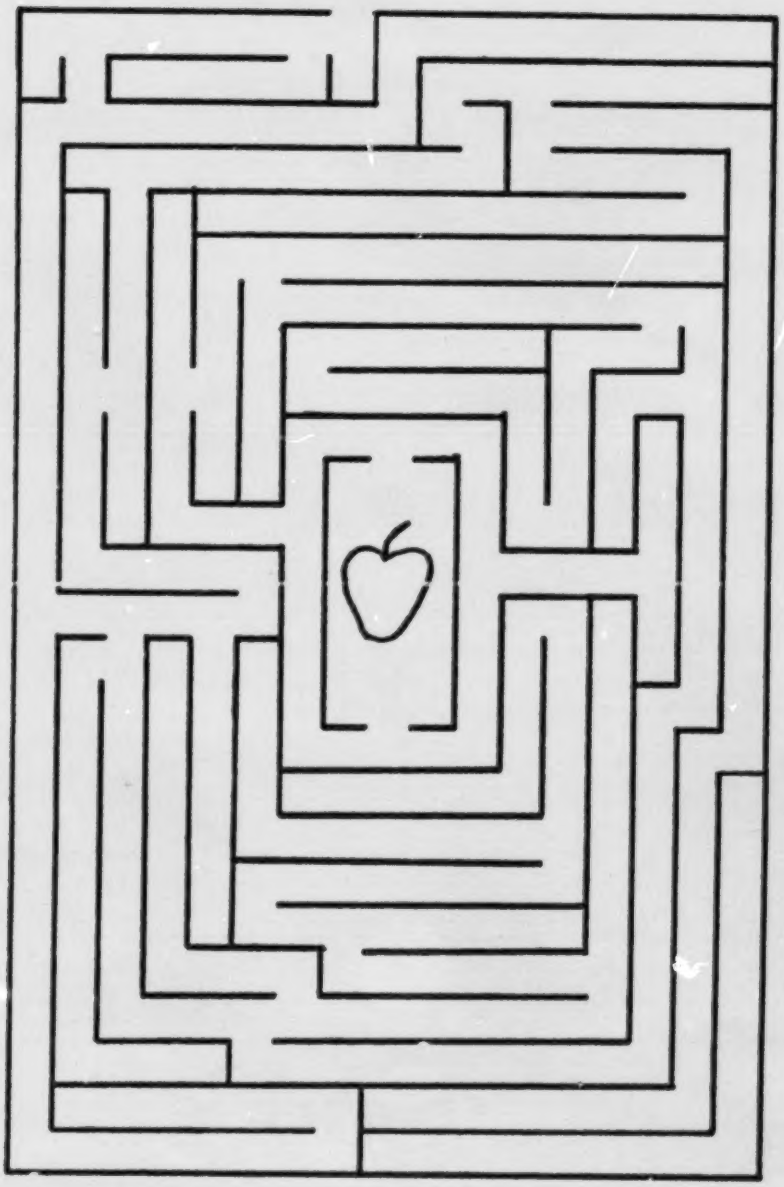

Figure 2. Complex maze.

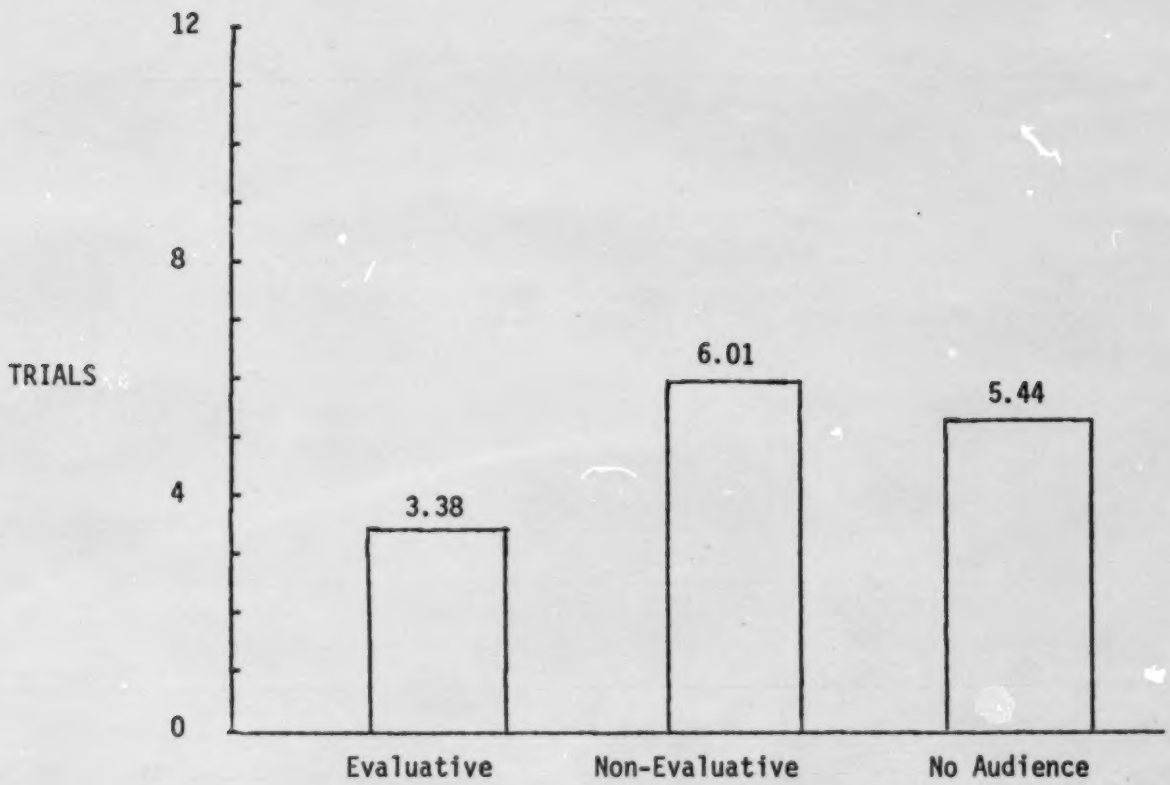

Figure 3. Mean trials to criterion on simple maze.

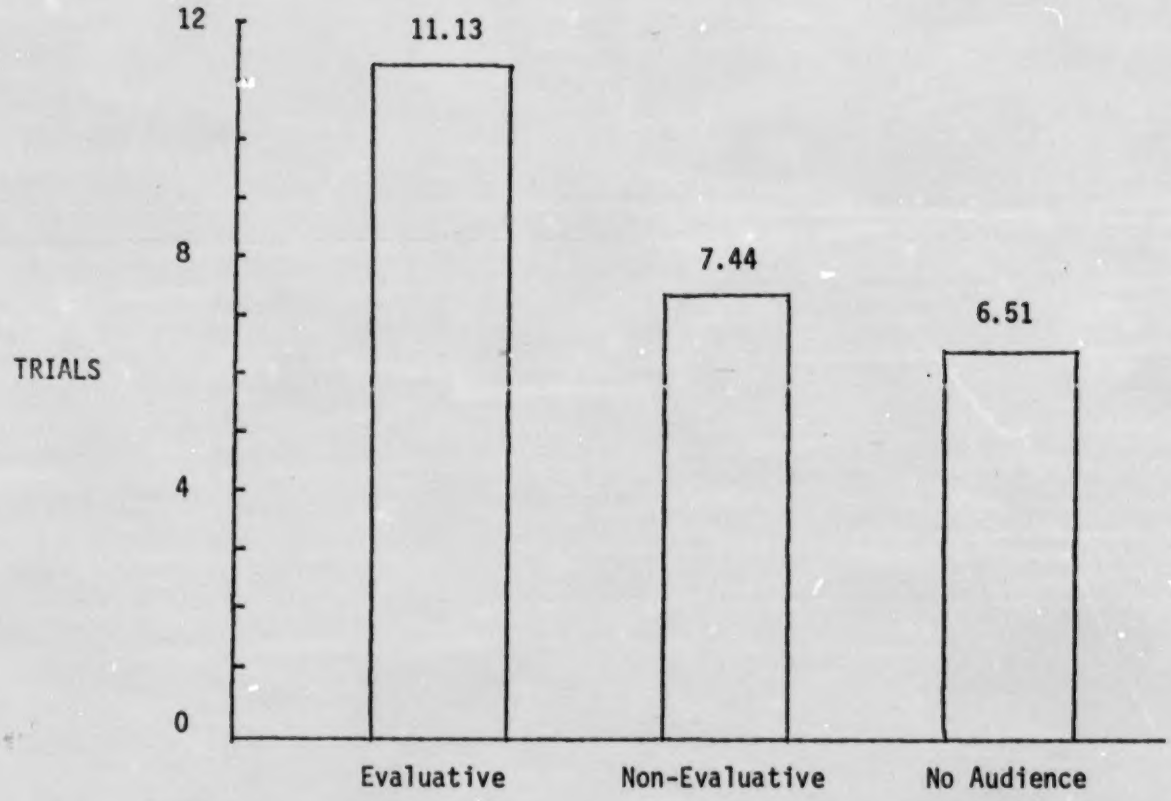

Figure 4. Mean trials to criterion on complex maze.